

Technical specifications



DX
series

1.5-3.2 t


eco-X


world wide network

24/7
support

STANDARD SPECIFICATIONS

September 2013		Counterbalance trucks Designation according VDI 3586	Data sheet for materials handling equipment				VDI 2198 Registration note
		Manufacturers Data and Design Characteristics					
CHARACTERISTICS	1.1	Manufacturer	UniCarriers				
	1.2	Model name	DX-15		DX-18		
		Model code	P1D1A15LQ	Y1D1A15Q	P1D1A18LQ	Y1D1A18Q	
	1.3	Power unit: Electric, Diesel, Gasoline, LPG, others	LPG	Diesel	LPG	Diesel	
	1.4	Operation: Sit, Hand, Pedestrian, Standing, Order picking	Sit	Sit	Sit	Sit	
	1.5	Load capacity	Q (t)	1.5	1.5	1.75	1.75
	1.6	Load centre	c (mm)	500	500	500	500
	1.8	Front overhang	x (mm)	400	400	405	405
	1.9	Wheel base	y (mm)	1415	1415	1415	1415
WEIGHTS	2.1	Service weight (without battery)	kg	2625 *1	2765	2845 *1	2985
	2.2	Axle load with load, front/rear	kg	3665/460	3705/560	4065/530	4105/630
	2.3	Axle load without load, front/rear	kg	1210/1415	1250/1515	1195/1650	1235/1750
WHEELS & TIRES	3.1	Tyres front/rear (C=Cushion,SE=superelastic,P=pneumatic)	P/P				
	3.2	Tyre size, front	6.50-10-14PR	6.50-10-14PR	6.50-10-14PR	6.50-10-14PR	
	3.3	Tyre size, rear	5.00-8-8PR	5.00-8-8PR	5.00-8-8PR	5.00-8-8PR	
	3.5	Wheels, number front/rear (x=powered)	2x/2	2x/2	2x/2	2x/2	
	3.6	Tread, front	b10 (mm)	890	890	890	890
	3.7	Tread, rear	b11 (mm)	900	900	900	900
	DIMENSIONS	4.1	Tilt Mast/carriage, forward/backward	α/β (°)	6/12	6/12	6/12
4.2		Height mast fully lowered	h_1 (mm)	1995	1995	1995	1995
4.3		Free lift	h_2 (mm)	150	150	155	155
4.4		Lift height	h_3 (mm)	3000	3000	3000	3000
4.5		Height mast fully extended	h_4 (mm)	3945	3945	3945	3945
4.7		Overhead guard height	h_6 (mm)	2115	2115	2115	2115
4.8		Seat height/Standing height	h_7 (mm)	1025	1025	1025	1025
4.12		Towing coupler height	h_{10} (mm)	245	245	245	245
4.19		Overall length	l_1 (mm)	3360	3360	3400	3400
4.20		Length to fork face	l_2 (mm)	2260	2260	2300	2300
4.21		Overall width ¹	b_1 (mm)	1080	1080	1080	1080
4.22		Fork dimensions	s,e,l (mm)	35x100x1100	35x100x1100	40x100x1100	40x100x1100
4.23		Carriage DIN 15173, Class / Form A,B		2A	2A	2A	2A
4.24		Carriage width	b_3 (mm)	920	920	920	920
4.31		Mast underclearance loaded	m_1 (mm)	115	115	115	115
4.32		Underclearance centre wheelbase	m_2 (mm)	145	145	145	145
4.33	Right angle stacking aisle with pallet 1000x1200 across forks	A_{st} (mm)	3570	3570	3600	3600	
4.34	Right angle stacking aisle with pallet 800x1200 across forks	A_{st} (mm)	3380	3380	3400	3400	
4.35	Turning radius	W_a (mm)	1970	1970	2000	2000	
4.36	Turning radius, inner	b_{13} (mm)	135	135	135	135	
PERFORMANCE	5.1	Travelling speed with/without load	km/h	18.5/18.5	18/18	18.5/18.5	18/18
	5.2	Lifting speed with/without load	mm/s	580/630	590/650	580/630	590/650
	5.3	Lowering speed with/without load	mm/s	520/520	520/520	520/520	520/520
	5.5	Drawbar pull, with/without load	kN	15.3/9.1	16/9.9	15.3/9.1	16/9.9
	5.7	Gradeability with/without load	%	39/23	38/23	35/20	36/20
	5.9	Acceleration with/without load	s	4.4/3.8	4.3/3.8	4.5/3.9	4.5/3.9
	5.10	Service brake		Hydraulic			
DRIVE	7.1	Engine manufacturer/type		K21	QD32	K21	QD32
	7.2	Engine rated power according ISO 1585	kW	41.5	36	41.5	36
	7.3	Rated engine revolutions	min ⁻¹	2700	2150	2700	2150
	7.4	Number of cylinders/Displacement	cm ³	4/2065	4/3153	4/2065	4/3153
	7.5	Fuel consumption according VDI cycle (60 cycles/hour)	l/h; kg/h	2.4	2.5	2.6	2.7
OTHERS	8.1	Type of drive control	Torque converter/ ¹				
	8.2	Working pressure attachments	bar	130	130	130	130
	8.4	Noise level operator's ear according EN12053	dB(A)	77*2	79	77*2	79

*) Excluding the weight for LPG bottle **) Noise level at operator's ear in ECO-mode

DIMENSIONS

MAST SPECIFICATIONS & RATED CAPACITIES: DX: 1.5 TONNE

Mast type	Mast name	Maximum fork height	Overall height			Free lift		Tilt angle Forward/backward	Load capacity ²
			Fully lowered	Fully extended		Without backrest	Std backrest		Load center
				Without backrest	Std backrest				500 mm
				mm ¹	mm ¹				mm ¹
mm ¹	mm ¹	mm ¹	mm ¹	mm ¹	degrees	kg			
TWO STAGE WIDE VIEW	2W300	3000	1995	3640	3945	150	150	6/12	1500
	2W330	3300	2145	3940	4245	150	150	6/12	1500
	2W350	3500	2280	4140	4445	150	150	6/12	1500
	2W370	3700	2405	4340	4645	150	150	6/12	1500
	2W400	4000	2595	4640	4945	150	150	6/6	1500
	2W450	4500	2845	5140	5445	150	150	6/6	1450
TWO STAGE FULL FREE	2W500	5000	3095	5640	5945	150	150	6/6	1350
	2F300	3000	1995	3675	3945	1355	1085	6/12	1500
	2F330	3300	2145	3975	4245	1505	1235	6/12	1500
	2F350	3500	2280	4175	4445	1640	1370	6/12	1500
	2F370	3700	2405	4375	4645	1765	1495	6/12	1500
	2F400	4000	2595	4675	4945	1955	1685	6/6	1500
THREE STAGE FULL FREE	3F385	3850	1845	4525	4795	1205	935	6/6	1500
	3F430	4300	1995	4975	5245	1355	1085	6/6	1400
	3F475	4750	2145	5425	5695	1505	1235	6/6	1350
	3F515	5150	2280	5825	6095	1640	1370	6/6	1300
	3F550	5500	2405	6175	6445	1765	1495	6/6	1250 *
	3F600	6000	2595	6675	6945	1955	1685	6/6	1100 #
	3F650	6500	2845	7175	7445	2205	1935	6/6	850 #
3F700	7000	3095	7675	7945	2455	2185	6/6	700 #	
THREE STAGE FULL FREE WIDE VIEW	3V360	3600	1845	4225	4545	1165	935	6/6	1450
	3V405	4050	1995	4675	4995	1315	1085	6/6	1400
	3V450	4500	2145	5125	5445	1465	1235	6/6	1350
	3V490	4900	2280	5525	5845	1595	1370	6/6	1250
	3V525	5250	2405	5875	6195	1725	1495	6/6	1250 *
	3V575	5750	2595	6375	6695	1915	1685	6/6	1150 #
	3V633	6330	2845	6955	7275	2165	1935	6/6	850 #
	3V688	6880	3095	7505	7825	2415	2185	6/6	700 #

MAST SPECIFICATIONS & RATED CAPACITIES: DX: 1.8 TONNE

Mast type	Mast name	Max. fork height	Overall height			Free lift		Tilt angle Forward/backward	Load capacity ²
			Fully lowered	Fully extended		Without backrest	Std backrest		Load center
				Without backrest	Std backrest				500 mm
				mm ¹	mm ¹				mm ¹
mm ¹	mm ¹	mm ¹	mm ¹	mm ¹	degrees	kg			
TWO STAGE WIDE VIEW	2W300	3000	1995	3640	3945	155	155	6/12	1750
	2W330	3300	2145	3940	4245	155	155	6/12	1750
	2W350	3500	2280	4140	4445	155	155	6/12	1750
	2W370	3700	2405	4340	4645	155	155	6/12	1750
	2W400	4000	2595	4640	4945	155	155	6/6	1700
	2W450	4500	2845	5140	5445	155	155	6/6	1600
TWO STAGE FULL FREE	2W500	5000	3095	5640	5945	155	155	6/6	1550
	2F300	3000	1995	3675	3945	1360	1090	6/12	1750
	2F330	3300	2145	3975	4245	1510	1240	6/12	1750
	2F350	3500	2280	4175	4445	1645	1375	6/12	1750
	2F370	3700	2405	4375	4645	1770	1500	6/12	1750
	2F400	4000	2595	4675	4945	1960	1690	6/6	1750 *
THREE STAGE FULL FREE	3F385	3850	1845	4525	4795	1210	940	6/6	1700
	3F430	4300	1995	4975	5245	1360	1090	6/6	1650
	3F475	4750	2145	5425	5695	1510	1240	6/6	1550
	3F515	5150	2280	5825	6095	1645	1375	6/6	1450 *
	3F550	5500	2405	6175	6445	1770	1500	6/6	1350 *
	3F600	6000	2595	6675	6945	1960	1690	6/6	1200 #
	3F650	6500	2845	7175	7445	2210	1940	6/6	850 #
3F700	7000	3095	7675	7945	2460	2190	6/6	700 #	
THREE STAGE FULL FREE WIDE VIEW	3V360	3600	1845	4225	4545	1170	940	6/6	1650
	3V405	4050	1995	4675	4995	1320	1090	6/6	1600
	3V450	4500	2145	5125	5445	1470	1240	6/6	1500
	3V490	4900	2280	5525	5845	1600	1375	6/6	1400
	3V525	5250	2405	5875	6195	1730	1500	6/6	1300 *
	3V575	5750	2595	6375	6695	1920	1690	6/6	1250 *
	3V633	6330	2845	6955	7275	2170	1940	6/6	900 #
	3V688	6880	3095	7505	7825	2420	2190	6/6	700 #

¹) 1 inch = 25.4 mm 1 kg = 0.4536 lb ²) With single pneumatic tyres unless indicated *³) Load capacity with single super elastic tyres ⁴) Load capacity with double tyres. Truck width: 1480 mm

STANDARD SPECIFICATIONS

September 2013		Counterbalance trucks Designation according VDI 3586	Data sheet for materials handling equipment								VDI 2198 Registration note	
		Manufacturers Data and Design Characteristics										
CHARACTERISTICS	1.1	Manufacturer	UniCarriers									
	1.2	Model name	DX-20		DX-25		DX-30		DX-32			
		Model code	U1D2A20LQ	Y1D2A20Q	U1D2A25LQ	Y1D2A25Q	UG1D2A30LQ	YG1D2A30Q	UG1D2A32LQ	YG1D2A32Q		
	1.3	Power unit: Electric, Diesel, Gasoline, LPG, others	LPG	Diesel	LPG	Diesel	LPG	Diesel	LPG	Diesel		
	1.4	Operation: Sit, Hand, Pedestrian, Standing, Order picking	Sit	Sit	Sit	Sit	Sit	Sit	Sit	Sit		
	1.5	Load capacity	Q (t)	2.0	2.0	2.5	2.5	3.0	3.0	3.2	3.2	
	1.6	Load centre	c (mm)	500	500	500	500	500	500	500	500	
	1.8	Front overhang	x (mm)	455	455	455	455	485	485	485	485	
	1.9	Wheel base	y (mm)	1650	1650	1650	1650	1760	1760	1760	1760	
WEIGHTS	2.1	Service weight	kg	3340*1	3485	3700*1	3845	4220*1	4365	4390*1	4535	
	2.2	Axle load with load, front/rear	kg	4705/635	4780/705	5420/780	5490/855	6385/835	6460/910	6675/915	6750/985	
	2.3	Axle load without load, front/rear	kg	1550/1790	1625/1860	1475/2225	1545/2300	1705/2515	1780/2590	1685/2705	1760/2775	
WHEELS & TIRES	3.1	Tyres front/rear (C=Cushion,SE=superelastic,P=pneumatic)	P/P									
	3.2	Tyre size, front	7.00-12-14PR	7.00-12-14PR	7.00-12-14PR	7.00-12-14PR	28x9-15-14PR	28x9-15-14PR	28x9-15-14PR	28x9-15-14PR		
	3.3	Tyre size, rear	6.00-9-10PR	6.00-9-10PR	6.00-9-10PR	6.00-9-10PR	6.50-10-14PR	6.50-10-14PR	6.50-10-14PR	6.50-10-14PR		
	3.5	Wheels, number front/rear (x=powered)	2x/2	2x/2	2x/2	2x/2	2x/2	2x/2	2x/2	2x/2		
	3.6	Tread, front	b10 (mm)	965	965	965	965	1005	1005	1005	1005	
	3.7	Tread, rear	b11 (mm)	975	975	975	975	980	980	980	980	
	DIMENSIONS	4.1	Tilt Mast/carriage, forward/backward	α/β (°)	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12
4.2		Height mast fully lowered	h_1 (mm)	1995	1995	1995	1995	2025	2025	2025	2025	
4.3		Free lift	h_2 (mm)	155	155	155	155	160	160	160	160	
4.4		Lift height	h_3 (mm)	3000	3000	3000	3000	3000	3000	3000	3000	
4.5		Height mast fully extended	h_4 (mm)	4045	4045	4045	4045	4140	4140	4140	4140	
4.7		Overhead guard height	h_6 (mm)	2130	2130	2130	2130	2155	2155	2155	2155	
4.8		Seat height/Standing height	h_7 (mm)	1040	1040	1040	1040	1065	1065	1065	1065	
4.12		Towing coupler height	h_{10} (mm)	335	335	335	335	365	365	365	365	
4.19		Overall length	l_1 (mm)	3630	3630	3705	3705	3870	3870	3870	3870	
4.20		Length to fork face	l_2 (mm)	2530	2530	2605	2605	2770	2770	2770	2770	
4.21		Overall width ¹	b_1 (mm)	1155	1155	1155	1155	1230	1230	1230	1230	
4.22		Fork dimensions	s,e,l (mm)	40x100x1100	40x100x1100	40x100x1100	40x100x1100	45x100x1100	45x100x1100	45x100x1100	45x100x1100	
4.23		Carriage DIN 15173, Class / Form A,B		2A	2A	2A	2A	3A	3A	3A	3A	
4.24		Carriage width	b_3 (mm)	1020	1020	1020	1020	1020	1020	1020	1020	
4.31		Mast underclearance loaded	m_1 (mm)	115	115	115	115	145	145	145	145	
4.32		Underclearance centre wheelbase	m_2 (mm)	165	165	165	165	190	190	190	190	
4.33		Right angle stacking aisle with pallet 1000x1200 across forks	Ast (mm)	3845	3845	3905	3905	4075	4075	4075	4075	
4.34		Right angle stacking aisle with pallet 800x1200 across forks	Ast (mm)	3585	3585	3705	3705	3875	3875	3875	3875	
4.35	Turning radius	Wa (mm)	2190	2190	2250	2250	2390	2390	2390	2390		
4.36	Turning radius, inner	b_{13} (mm)	170	170	170	170	160	160	160	160		
PERFORMANCE	5.1	Travelling speed with/without load	km/h	19/19	18/18	19/19	18/18	19/19	18.5/18.5	19/19	18.5/18.5	
	5.2	Lifting speed with/without load	mm/s	620/700	620/660	620/700	620/660	520/580	510/550	470/580	490/550	
	5.3	Lowering speed with/without load	mm/s	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500	
	5.5	Drawbar pull, with/without load	kN	18.5/14.7	16.5/15	18.5/14.7	16.5/15	17.4/17.2	16.7/17.5	17.4/16.7	16.7/17.4	
	5.7	Gradeability with/without load	%	34/26	29/26	29/22	24/22	23/23	21/23	22/21	20/22	
	5.9	Acceleration with/without load	s	4.3/3.7	4.6/3.9	4.5/3.8	4.8/4.0	4.8/4.0	5.2/4.2	4.8/4.0	5.3/4.3	
5.10	Service brake	Hydraulic										
DRIVE	7.1	Engine manufacturer/type		K25	QD32	K25	QD32	K25	QD32	K25	QD32	
	7.2	Engine rated power according ISO 1585	kW	46.9	36	46.9	36	46.9	36	46.9	36	
	7.3	Rated engine revolutions	min ⁻¹	2700	2150	2700	2150	2700	2150	2700	2150	
	7.4	Number of cylinders/Displacement	cm ³	4/2488	4/3153	4/2488	4/3153	4/2488	4/3153	4/2488	4/3153	
	7.5	Fuel consumption according VDI cycle (60 cycles/hour)	l/h; kg/h	2.3	2.8	3.0	3.1	3.3	4.2	3.6	4.4	
OTHERS	8.1	Type of drive control	Torque converter/ ¹									
	8.2	Working pressure attachments	bar	130	130	130	130	130	130	130	130	
	8.4	Noise level operator's ear according EN12053	dB(A)	77 ²	78	77 ²	78	77 ²	78	77 ²	78	

*1) Excluding the weight for LPG bottle **2) Noise level at operator's ear in ECO-mode

DIMENSIONS

MAST SPECIFICATIONS & RATED CAPACITIES: DX: 2.0 - 2.5 TONNE

Mast type	Mast name	Maximum fork height	Overall height			Free lift		Tilt angle Forward/backward	Load capacity ² Load center 500 mm	
			Fully lowered	Fully extended		Without backrest	Std backrest		2.0 tonne	2.5 tonne
				Without backrest	Std backrest					
TWO STAGE WIDE VIEW	2W300	3000	1995	3640	4045	155	155	6/12	2000	2500
	2W330	3300	2145	3940	4345	155	155	6/12	2000	2500
	2W350	3500	2280	4140	4545	155	155	6/12	2000	2500
	2W370	3700	2405	4340	4745	155	155	6/12	2000	2500
	2W400	4000	2595	4640	5045	155	155	6/6	2000	2500
	2W450	4500	2845	5140	5545	155	155	6/6	1950	2400
TWO STAGE FULL FREE	2F300	3000	1995	3675	4045	1360	990	6/12	2000	2500
	2F330	3300	2145	3975	4345	1510	1140	6/12	2000	2500
	2F350	3500	2280	4175	4545	1645	1275	6/12	2000	2500
	2F370	3700	2405	4375	4745	1770	1400	6/12	2000	2500
	2F400	4000	2595	4675	5045	1960	1590	6/6	2000	2500
	THREE STAGE FULL FREE	3F385	3850	1845	4525	4895	1210	840	6/6	2000
3F430		4300	1995	4975	5345	1360	990	6/6	1950	2450 [@]
3F475		4750	2145	5425	5795	1510	1140	6/6	1800	2400 [@]
3F515		5150	2280	5825	6195	1645	1275	6/6	1800 [@]	2350 [@]
3F550		5500	2405	6175	6545	1770	1400	6/6	1750 [@]	2250 [@]
3F600		6000	2595	6675	7045	1960	1590	6/6	1650 [@]	2100 [@]
3F650		6500	2845	7175	7545	2210	1840	6/6	1400 [@]	1450 [@]
3F700		7000	3095	7675	8045	2460	2090	6/6	1000 [@]	1100 [@]
THREE STAGE FULL FREE WIDE VIEW	3V360	3600	1845	4225	4645	1170	840	6/6	1950	2450
	3V405	4050	1995	4675	5095	1320	990	6/6	1900	2400 [@]
	3V450	4500	2145	5125	5545	1470	1140	6/6	1800	2350 [@]
	3V490	4900	2280	5525	5945	1600	1275	6/6	1750 [@]	2300 [@]
	3V525	5250	2405	5875	6295	1730	1400	6/6	1700 [@]	2250 [@]
	3V575	5750	2595	6375	6795	1920	1590	6/6	1650 [@]	2100 [@]
	3V633	6330	2845	6955	7375	2170	1840	6/6	1500 [@]	1700 [@]
	3V688	6880	3095	7505	7925	2420	2090	6/6	1100 [@]	1200 [@]

¹ 1 inch = 25.4 mm 1 kg = 0.4536 lb ² Capacity with single pneumatic tyres unless indicated [@] With wide, single elastic tyres. Truck width: 1285 mm

MAST SPECIFICATIONS & RATED CAPACITIES: DX: 3.0 - 3.2 TONNE

Mast type	Mast name	Maximum fork height	Overall height			Free lift		Tilt angle Forward/backward	Load capacity ² Load center 500 mm	
			Fully lowered	Fully extended		Without backrest	Std backrest		3.0 tonne	3.2 tonne
				Without backrest	Std backrest					
TWO STAGE WIDE VIEW	2W300	3000	2025	3675	4140	160	160	6/12	3000	3200
	2W330	3300	2175	3975	4440	160	160	6/12	3000	3200
	2W350	3500	2310	4175	4640	160	160	6/12	3000	3200
	2W370	3700	2435	4375	4840	160	160	6/12	3000	3200
	2W400	4000	2625	4675	5140	160	160	6/6	3000	3200
	2W450	4500	2875	5175	5640	160	160	6/6	3000	3200
TWO STAGE FULL FREE	2F300	3000	2025	3700	4140	1370	930	6/12	3000	3100
	2F330	3300	2175	4000	4440	1520	1080	6/12	3000	3100
	2F350	3500	2310	4200	4640	1655	1215	6/12	3000	3100
	2F370	3700	2435	4400	4840	1780	1340	6/12	3000	3100
	2F400	4000	2625	4700	5140	1970	1530	6/6	3000	3100
	THREE STAGE FULL FREE	3F385	3850	2025	4515	4990	1405	930	6/6	3000
3F430		4300	2175	4965	5440	1555	1080	6/6	3000	3100
3F475		4750	2310 [@]	5415	5890	1690	1215	6/6	2900	3100
3F515		5150	2435	5815	6290	1815	1340	6/6	2850 [#]	3050 [#]
3F550		5500	2625	6165	6640	2005	1530	6/6	2800 [#]	3000 [#]
3F600		6000	2875	6665	7140	2255	1780	6/6	2700 [#]	2900 [#]
3F650		6500	3125	7165	7640	2505	2030	6/6	2400 [#]	2600 [#]
3F700		7000	3375	7665	8140	2755	2280	6/6	2100 [#]	2300 [#]
THREE STAGE FULL FREE WIDE VIEW	3V385	3850	2025	4505	4990	1325	930	6/6	3000	3100
	3V430	4300	2175	4955	5440	1475	1080	6/6	2950	3100
	3V470	4700	2310	5355	5840	1605	1215	6/6	2850	3050
	3V505	5050	2435	5705	6190	1735	1340	6/6	2750 [#]	2950 [#]
	3V555	5550	2625	6205	6690	1925	1530	6/6	2700 [#]	2900 [#]
	3V600	6000	2875	6655	7140	2175	1780	6/6	2650 [#]	2850 [#]
	3V650	6500	3125	7155	7640	2425	2030	6/6	2400 [#]	2600 [#]
	3V700	7000	3375	7655	8140	2545	2280	6/6	2100 [#]	2300 [#]

¹ 1 inch = 25.4 mm 1 kg = 0.4536 lb ² Capacity with single pneumatic tyres unless indicated [@] special containers mast available: 2175 mm [#] Load capacity with double tyres. Truck width: 1720 mm ^{*} Load capacity with single superelastic tyre

It's all about
the price.
But what
price?

Reduce your Total Cost of Operation with UniCarriers

We agree. Price is everything. Or to be more specific: your Total Cost of Operation (TCO). That's why we're so focused on cutting costs and improving your material handling. The truck and its performance play an important role, but this is even more about how we can support you in optimising your warehouse operations to give you the best value for your money. Which – in the long run – is what creates a winner.

UNICARRIERS CORPORATION
U-DX.S.EN/UCE-2015-01

UniCarriers Corporation reserves the right to make any changes without notice concerning colours, equipment or specifications detailed in this brochure, or to discontinue individual models. The colours of vehicles delivered may differ slightly from those in this brochure. The specifications vary for different countries depending on local market conditions. Please consult your local dealer to ensure that the vehicle delivered accords with your expectations. All values are determined based on the standard condition and may vary, due to motor and system tolerances, condition of the truck and operational conditions.

Some equipment shown on photos are optional.